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P A R T II.
For the Y E A R 1760.

XL. *A Letter to the Honourable J. Th. Klein, Secretary to the City of Dantzick, from Mr. Peter Collinson, F. R. S. concerning the Migration of Swallows.*

Read March 9, 1758. **I** Do not know which to admire most in my dear friend Klein, his learning, or his judgment, in compiling so many ingenious and instructive books in natural history.

But I must beg leave to dissent from my learned friend, in an article he takes great pains to establish; which is, that swallows are not birds of passage; but, at the time of their going away, retire under water, and live therein, all the winter. This I cannot comprehend, being so contrary to nature and reason; for as they cannot live in that state, without some degree of breathing, this requires the circulation of the blood, however weak and languid. Now, as respiration is absolutely necessary for circulation, how is it possible to be carried on for so many months under water, without the risque of suffocation?

Besides, if so remarkable a change was intended, the great wisdom of the Almighty Creator would, undoubtedly, be seen in some particular contrivance, in the structure of the organs of the heart of this bird, to enable it to undergo so very remarkable a change of elements: and my learned friend has not attempted to show any thing of this nature, in order to confirm his system.

An easy experiment may throw some light on this doubtful affair—At the time of their going away, take a swallow, and confine it in a tub under water: if it remains there for a week or two alive, without any remarkable inconvenience, then there may be some probability for its continuing so many months in that state.

The conclusions, that are drawn from some of the tribe of insects subsisting under water, are far from being conclusive, to found an analogy upon; as insects differ from other animals in so many particulars, that very little or nothing can be concluded, or inferred, of the one, from what we observe in the other.

Towards the end of September, the swallows assemble on the reeds in the islands in our river Thames, and have, no doubt, so done for ages past; and yet I never heard, or read, of any fisherman, or other person, that has ever found in the winter months a swallow under water, in a torpid living state; for if such a marvelous thing had ever happened, it would have been soon communicated to the public. Besides, as these islands of reeds and willows are annually cut down, for several uses, and yet not a swallow has been discovered in his aquatic abode; and, considering

ing the multitudes I have seen on these reeds and willows in the autumn; if they took their winter's residence under water, it is most reasonable to think, in a river so frequented, and in so long a course of years, some would have been found in that situation. Another circumstance I must add; in great towns remote from water, where rivers and reeds are not near, I have frequently observed that, a little before the swallows depart, they, every morning early, gather together on the roofs of large houses, exposed to the morning sun: this they daily do for some time, to collect themselves, before they take their flight.

Next, to confirm my opinion, that the migration of some species of swallows is certain, I think I have some undoubted proofs.

I have often heard Sir Charles Wager, first lord of the admiralty, relate that, in one of his voyages home, in the spring of the year, as he came into soundings in our channel, a great flock of swallows came and settled on all his rigging: every rope was covered, they hung on one another like a swarm of bees; the decks and carvings were filled with them; they seemed almost spent and famished, and were only feathers and bones; but, being recruited with a night's rest, they took their flight in the morning.

Capt. Wright, a very honest man, whom I could depend on, told me, the like happened to him, in a voyage from Philadelphia hither.

But a yet stronger confirmation of the swallows being birds of passage is the observation in Mr. Adanson's history of Senegal, lately published; which is, as near as may be literally translated, from the author's own words; *viz.* " The sixth of the same month,

“ (October) at half an hour past six in the evening,
 “ being about fifty leagues from the coast, (between
 “ the island of Gorea and Senegal) four swallows
 “ came to take up their night’s lodging on the ship,
 “ and alighted on the shrouds. I easily caught all
 “ four, and knew them to be the true European
 “ swallows. This lucky accident confirmed me in
 “ the opinion I had formed, that these birds pass the
 “ seas, to get into the countries of the torrid zone, at
 “ the approach of winter in Europe; and, to that
 “ purpose, I have since remarked, that they do not
 “ appear at Senegal but in that season. A circum-
 “ stance no less worthy of note is, that at Senegal
 “ the swallows do not build nests, as in Europe; but
 “ lie every night by pairs, or single, in the sand upon
 “ the sea-shore, where they rather chuse to fix their
 “ habitation, than up in the country.” *Hist. de*
Senegal, p. 67.

This observation (as it comes from a professed naturalist, and one, who went into those countries on purpose to collect what was curious in that way) seems to put the matter out of doubt; and the hear-say stories of ignorant peasants and credulous people are by no means to be put in competition with it.

I have, for many years, been very watchful in taking notice of the times when the swallows leave us, and have twice seen them undoubtedly taking their flight. At two different years, on the 27th and 29th of September, walking in my garden at noon, on very clear sunshiny days, and looking up into the sky, at a very great height I distinctly saw an innumerable number of swallows, soaring round and round, higher and higher, until my eyes were so
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pained with looking, that I could no longer discern them.

But, as my friend Klein seems to be so positive, that the *hirundo riparia*, or sand martin, at the approach of winter, retires into the holes, in which that species breed up their young, and made their summer's residence, and there pass that cold season in a dormant state, as snakes, lizards, and some other animals do, I have been the more solicitous to come at the truth. But as these sandy precipices, in which these martins build, are mostly inaccessible, some years have passed, before I could find a situation where the experiment could be fairly made, without difficulty or danger. Such a sand-hill I found in the parish of Byfleet in Surry. The clergyman being my friend, and well qualified to make the experiment, at my request, was so obliging to undertake it. I shall give his letter to me, in his own words.

“ Dear Sir, Byfleet, October 22, 1757.

“ I took a square of about twelve feet, over that
 “ part of the cliff where the holes were thickest,
 “ which, in going down from the surface, I judged
 “ would take in about forty holes. I set to work,
 “ and came to the holes; but found no martins,
 “ nothing but old nests in the furthest end of the
 “ holes, which were from a foot and half to two
 “ feet and half deep from the entrance. We care-
 “ fully searched forty holes, but found no birds;
 “ but at least thirty of them had nests. The passage
 “ to them was very near in a straight horizontal line;
 “ the nest was sunk about an inch and half below
 “ the level of the passage; the materials next the
 “ bottom

“ bottom were straws, then coarse and fine grasses;
 “ the whole structure of no great elegance. The few
 “ eggs, that were left behind, were of a clear un-
 “ spotted white, the size of a robbin-red-breast’s.”

This fair trial being made by a gentleman of veracity and ability is very conclusive; for it certainly proves, that the sand martins do not take up their winter abode in their summer dwellings. Therefore, there is sufficient reason to believe, from the before-recited observations *on the common swallows*, and *this* so recently made on the *sand martins*, that they are all birds of passage.

ADDITIONAL REMARK.

There are four distinct species of birds, that go under the general name swallow; *viz.* the swift or black martin; 2. the swallow, that builds in chimneys; 3. the martin, that builds against houses; 4. the sand martin, that builds in sand-banks. I hope, that I have clearly proved, that some of these species are birds of passage. But some of my friends assert, that they pass the winter in cliffs or caverns of the earth, in banks or precipices. What is much to be regretted is, that the gentlemen were not curious enough to distinguish the particular species, which they found in a torpid state. Monf. Adanson, in his account of Senegal, has omitted this. So that nothing certain can yet be pronounced, which species stays, or which goes.